IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A multi-channel encoder arranged to process input signals conveyed in N input channels to generate corresponding output signals conveyed in M output channels together with parametric data ~~such that~~, wherein M and N are integers and N is greater than M, the encoder comprising:

(a) a down-mixer ~~configured~~ for down-mixing ~~segmented and transformed representations of~~ the input signals to generate corresponding output signals ~~to be conveyed in the M output channels together with the parameter data~~; and

(b) an analyzer for processing ~~the segmented and transformed representations of~~ the input signals either during down-mixing or as a separate process, said analyzer being operable to generate said parametric data complementary to the output signals ~~to be conveyed in the M output channels~~, said parametric data describing mutual differences between the N channels of input ~~signal~~ signals so as to allow substantially for regenerating during decoding of one or more of the N channels of input ~~signal~~ signals from the M channels of output ~~signal~~signals, said output signals being in a form compatible for reproduction in decoders providing for N or for fewer than N output channels to enable backwards compatibility, characterized in that the parametric data comprises at least one parameter describing a power of a central channel signal with respect to a power of a right channel signal and a left channel

signal for a two channel downmix of the central channel signal, the right channel signal and the left channel signal, the at least one parameter being substantially given by:

$$IID_C = 10\log 10\left(\frac{\varepsilon^2 \sum_k C[k]C^*[k]}{\sum_k L[k]L^*[k] + \sum_k R[k]R^*[k]}\right)$$

where C[k] denotes sample k of the central channel signal C; R[k] denotes sample k of the right signal R, L[k] denotes sample k of the left signal C and ε denotes a weight determining a strength of the central signal in the two channel downmix.

2. (Currently Amended) ~~An~~ The multi-channel encoder ~~according to~~ as claimed in Claim 1, wherein the multi-channel encoder is a 5-channel encoder arranged to generate the output signals and parametric data in a form compatible with at least one of corresponding 2-channel stereo decoders, 3 channel decoders and 4-channel decoders.

3. (Currently Amended) ~~An~~ The multi-channel encoder ~~according to~~ as claimed in Claim 1, wherein the analyzer includes processing means for converting ~~segments of~~ the input signals by way of transformation from a temporal domain to a frequency domain and for processing these ~~segmented and~~ transformed input signals to generate the parametric data.

4. (Currently Amended) ~~An~~ The multi-channel encoder ~~according~~ ~~to~~as claimed in Claim 3, wherein at least one of the down-mixer and the analyzer are arranged to process the input signals as a sequence of time-frequency tiles to generate the output signals.

5. (Currently Amended) ~~An~~ The multi-channel encoder ~~according~~ ~~to~~as claimed in Claim 4, wherein the tiles are obtained by transformation of mutually overlapping analysis windows.

6. (Currently Amended) ~~An~~ The multi-channel encoder ~~according~~ ~~to~~as claimed in Claim 1, ~~including~~ wherein said multi-channel encoder further includes a coder for processing the input signals to generate M intermediate audio data channels for inclusion in the M channels of output signals, the analyzer further being arranged to output information in the parametric data relating to at least one of:

(a) inter-channel input signal power ratios or logarithmic level differences;

(b) inter-channel coherence between the input signals;

(c) a power ratio between the input signals of one or more channels and a sum of powers of the input signals of one or more channels; and

(d) phase differences or time differences between signal pairs.

7. (Currently Amended) ~~An~~ The multi-channel encoder ~~according to~~ as claimed in Claim 6, wherein in (d) said phase differences are average phase differences.

8. (Currently Amended) ~~An~~ The multi-channel encoder ~~according to~~ as claimed in Claim 6, wherein calculation of at least one of the phase differences, coherence data and the power ratios is followed by principal component analysis (PCA) and/or inter-channel phase alignment to generate the N output ~~signals to be conveyed in M~~ channels.

9. (Currently Amended) ~~An~~ The multi-channel encoder ~~according to~~ as claimed in Claim 1, wherein at least one of the input signals conveyed in the N channels corresponds to an effects channel.

10. (Currently Amended) ~~An~~ The multi-channel encoder ~~according to~~ as claimed in Claim 1, wherein said multi-channel encoder is adapted to generate the output signals in a form suitable for playback using conventional playback systems.

11. (Currently Amended) A method of ~~multi-channel~~ encoding input signals conveyed in N input channels in a multi-channel encoder to generate corresponding output signals conveyed in M output channels together with parametric data, wherein M and N are integers and n is greater than M, the method comprising the steps of:

(a) down-mixing, via a down mixer, segmented and transformed representations of input signals conveyed in N input channels of a multi-channel encoder to generate the corresponding output signals conveyed in M output channels together with parametric data, wherein M and N are integers and N is greater than M; and

(b) processing, via an analyzer, the segmented and transformed representations of the input signals to provide when being down-mixed or separately, said processing providing said parametric data complementary to the output signals conveyed in the M output channels, said parametric data describing mutual differences between the N channels of input signal so as to allow substantially for regeneration of the N channels of input signal signals from the M channels of output signal signals during decoding, said output signals being in a form compatible for reproduction in decoders providing for N or for fewer than N channels, characterized in that the parametric data comprises at least one parameter describing a power of a central channel signal with respect to a power of a right channel signal and a left channel signal for a two channel downmix of the central channel signal, the right channel signal and the left channel signal; the at least one parameter being substantially given by:

$$IID_C = 10\log 10\left(\frac{\varepsilon^2 \sum_k C[k]C^*[k]}{\sum_k L[k]L^*[k] + \sum_k R[k]R^*[k]}\right)$$

where C[k] denotes sample k of the central channel signal C; R[k] denotes sample k of the right signal R, L[k] denotes sample k of the left signal C and ε denotes a weight determining a strength of the central signal in the two channel downmix.

12. (Currently Amended) ~~A~~ The method ~~according to~~ of encoding as claimed in Claim 11, wherein the multi-channel encoding is adapted to encode input signals corresponding to 5-channels and generate the output signals and parametric data in a form compatible with one or more of corresponding 2-channel stereo decoders, ~~3~~ 2-channel decoders and 4-channel decoders.

13. (Currently Amended) ~~A~~ The method ~~according to~~ of encoding as claimed in Claim 11, wherein said processing includes converting ~~segments of~~ the input signals by way of transformation from a temporal domain to a frequency domain.

14. (Currently Amended) ~~A~~ The method ~~according to~~ of encoding as claimed in Claim 13, wherein at least one of the input signals are processed as a sequence of time-frequency tiles to generate the output signals.

15. (Currently Amended) ~~A~~ The method ~~according to~~ of encoding as claimed in Claim 14, wherein the tiles correspond to mutually overlapping analysis windows.

16. (Currently Amended) ~~A~~ The method ~~according to~~ of encoding as claimed in Claim 11, wherein said processing further includes using a coder for processing the input signals to generate M intermediate audio data channels for inclusion in the ~~M channels of~~ output signals, the coder further being arranged to output information in the parametric data relating to at least one of:

(a) inter-channel input power ratios or logarithmic level differences;

(b) inter-channel coherence between the input signals;

(c) a power ratio between the input signals of one or more channels and a sum of powers of the input signals of one or more channels; and

(d) power differences or time differences between signal pairs.

17. (Currently Amended) ~~A~~ The method ~~according to~~ of encoding as claimed in Claim 16, wherein the power differences are average power differences.

18. (Currently Amended) ~~A~~ The method ~~according to~~ of encoding as claimed in Claim 16, wherein calculation of at least one of the phase difference, the coherence data and the power ratio is followed by principal component analysis (PCA) and/or inter-channel phase alignment to generate the output signals.

19. (Currently Amended) ~~A~~ The method ~~according to~~ of encoding as claimed in Claim 11, wherein at least one of the input signals conveyed in the N channels corresponds to an effects channel.

20. (Currently Amended) ~~Encoded~~ A computer-readable medium having stored thereon encoded data content ~~being~~ generated using the method ~~of~~ as claimed in Claim 11.

21. (Cancelled).

22. (Currently Amended) A decoder operable to decode encoded output data as generated by an encoder ~~according to Claim 1~~, said encoded output data comprising M channels and associated parametric data generated from input signals of N channels ~~such that~~, wherein M < N where M and N are integers, the decoder including a processor:

(a) for receiving the ~~M channels of~~ encoded output data~~, segmenting the M channels of encoded output data and transforming the segmented data by~~ converting ~~it~~ the encoded output data from a time domain to a frequency domain;

(b) for applying the parametric data in the frequency domain to extract content from the M channels to regenerate from the M channels regenerated data content corresponding to input signals of one or more of N channels not directly included in or omitted from the encoded output data; and

(c) for processing the regenerated data content for outputting one or more of the regenerated input signals of N channels at one or more outputs of the decoder, wherein the processor is arranged to generate a regenerated left channel L[k], a regenerated right channel R[k] and a regenerated center channel C[k] as

$$\begin{bmatrix} L[k] \\ R[k] \\ C[k] \end{bmatrix} = \begin{bmatrix} w_L L_{out} \\ w_R R_{out} \\ w_{LC} L_{out} + w_{RC} R_{out} \end{bmatrix}$$

where L_{out} is a left channel of the M channels, R_{out} is a right channel of the M channels, and w_{LC} and w_{RC} depend on an interchannel level parameter of the parametric data.

23. (Currently Amended) ~~A~~ The decoder ~~according to~~ as claimed in Claim 22, wherein said processor is operable to apply an all-pass decorrelation filter to obtain decorrelated versions of signals for use in regenerating said one or more input signals of N channels at the decoder.

24. (Currently Amended) ~~A~~ The decoder ~~according to~~ as claimed in Claim 23, wherein the processor is operable to apply inverse encoder rotation to split signals of the M channels and decorrelated versions thereof into their constituent components for regenerating said one or more input signals of N channels at the decoder.

25. (Currently Amended) ~~A~~ The decoder ~~according to~~ as claimed in Claim 24, said decoder being operable to generate its one or more decoder outputs solely from said M channels of encoded output data received at the decoder.